BEST AVAILABLE COPY



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11) EP 1 289 042 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3: 16.03.2005 Bulletin 2005/11

(51) Int Cl.7: H01M 8/10

- (43) Date of publication A2: 05.03.2003 Bulletin 2003/10
- (21) Application number: 02019295.1
- (22) Date of filing: 28.08.2002
- (84) Designated Contracting States:

 AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
 IE IT LI LU MC NL PT SE SK TR

 Designated Extension States:

 AL LT LV MK RO SI
- (30) Priority: 29.08.2001 JP 2001260240
- (71) Applicant: Honda Giken Kogyo Kabushiki Kaisha Minato-ku, Tokyo (JP)
- (72) Inventors:
 - Nanaumi, Masaaki,
 K. K. Hon-da Gijutsu Kenkyusho
 Wako-shi, Saitma-ken (JP)

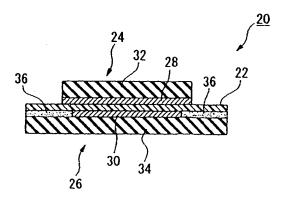
- Yano, Junichi, K. K. Hon-da Gijutsu Kenkyusho Wako-shi, Saitma-ken (JP)
- Nakanishi, Yoshihiro,
 K.K.Hon-da Gijutsu Kenkyusho
 Wako-shi, Saitma-ken (JP)
- Nishiyama, Tadashi,
 K. K. Hon-da Gijutsu Kenkyusho
 Wako-shi, Saitma-ken (JP)
- (74) Representative: Prechtel, Jörg, Dipl.-Phys. Dr. et al Weickmann & Weickmann Patentanwälte Postfach 86 08 20 81635 München (DE)

(54) Membrane electrode assembly and fuel cell

(57) In order to provide a membrane electrode assembly and a fuel cell in which the thickness of the solid polymer electrolyte membrane is thin by enhancing self-protection of the solid polymer electrolyte membrane, a membrane electrode assembly (20) comprises a solid polymer electrolyte membrane (22) and a pair of gas diffusion electrode layer (24 and 26) having catalyst layers (28 and 30) and gas diffusion layers (24 and 26). The

catalyst layers of the gas diffusion electrode layer sandwich the solid polymer electrolyte membrane, one surface of the solid polymer electrolyte membrane is covered by the gas diffusion electrode layer (26) and the other surface of the solid polymer electrolyte membrane extends over the gas diffusion electrode layer (24), and ends of the catalyst layer of one gas diffusion electrode layer are disposed to be offset to ends of the catalyst layer of the other gas diffusion electrode layer.

FIG. 1



EP 1 289 042 A3

BEST AVAILABLE COPY

EP 1 289 042 A3



EUROPEAN SEARCH REPORT

Application Number EP 02 01 9295

	DOCUMENTS CONSIDE			
Category	Citation of document with in of relevant pass:	dication, where appropriate, ages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.CI.7)
D , X	US 5 464 700 A (STEC 7 November 1995 (199 * column 1, lines 5 * column 3, lines 1 * column 6, lines 1 * figures 5-8 *	95-11-07) 3-58 * 3-26 *	1-7	H01M8/10
P,X	EP 1 152 477 A (HONI 7 November 2001 (200 * paragraph '0007! * claims 1-16 * * figures 2,7-14,18	01-11-07) *	1-6	
A	DE 198 15 796 A (KE JUELICH) 14 October * column 2, line 68 * figure 1 *		1 -7	
D,A	US 5 176 966 A (EPP 5 January 1993 (199 * the whole documen	3-01-05)	1-7	TECHNICAL FIELOS SEARCHED (IN.CI.7)
	The present search report has	been drawn up for all claims Date of completion of the sea		Examine:
	The Hague	26 January 20	1	oflacher, A
X:pad Y:padoo A:ted O:no	CATEGORY OF CITED DOCUMENTS ticularly relevant if taken alone ticularly relevant if combined with anot turnent of the same category hnological background n-written disclusure ermediate document	T : ineory or E : earlier par after the fi	principle underlying the tent document, but put iting date I cred in the application cred for other reasons of the same patent lam	: invention tished on, or n s

BEST AVAILABLE COPY

EP 1 289 042 A3

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 02 01 9295

This annex tists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

26-01-2005

AU 1886692 A 08-01-19 CA 2102695 A1 05-12-19 W0 9222096 A2 10-12-19 DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 W0 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20	AU 1886692 A 08-01-19 CA 2102695 A1 05-12-19 W0 9222096 A2 10-12-19 DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 W0 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	AU 1886692 A 08-01-19 CA 2102695 A1 05-12-19 W0 9222096 A2 10-12-19 DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 W0 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	AU 1886692 A 08-01-19 CA 2102695 A1 05-12-19 W0 9222096 A2 10-12-19 DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 W0 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	Patent document cited in search report		Publication date		Patent family member(s)		Publication date
AU 1886692 A 08-01-19 CA 2102695 A1 05-12-19 W0 9222096 A2 10-12-19 DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 W0 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-2	AU 1886692 A 08-01-19 CA 2102695 A1 05-12-19 W0 9222096 A2 10-12-19 DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 W0 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	AU 1886692 A 08-01-19 CA 2102695 A1 05-12-19 W0 9222096 A2 10-12-19 DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 W0 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	AU 1886692 A 08-01-19 CA 2102695 A1 05-12-19 W0 9222096 A2 10-12-19 DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 W0 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	US 5464700	Α	07-11-1995	AU	664703	B2	30-11-199
WO 9222096 A2 10-12-19 DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-2	WO 9222096 A2 10-12-19 DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	WO 9222096 A2 10-12-19 DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	WO 9222096 A2 10-12-19 DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20				AU	1886692	Α	08-01-199
WO 9222096 A2 10-12-19 DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	WO 9222096 A2 10-12-19 DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	WO 9222096 A2 10-12-19 DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	WO 9222096 A2 10-12-19 DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20				CA	2102695	A 1	05-12-199
DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	DE 69204834 D1 19-10-19 DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20							
DE 69204834 T2 04-04-19 EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 01 30-01-20 EP 10586461 A1 16-03-19 DE 59903834 01 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 BE 19805786 A1 21-10-19 BE 19903834 01 30-01-20 BE 1970362 A1 24-01-20	DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 01 30-01-20 EP 10586461 A1 16-03-19 DE 59903834 01 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20							
EP 0586461 Al 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 Al 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 Al 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 Al 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 Al 21-10-19 WO 9953558 Al 21-10-19 DE 59903834 01 30-01-20 EP 1070362 Al 24-01-20 US 6528197 Bl 04-03-20	EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 01 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 01 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	EP 0586461 A1 16-03-19 JP 7501417 T 09-02-19 JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20 CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 01 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20							
DE 19815796 A 14-10-1999 DE 19815796 AI 14-10-1999 AU 4132999 A 01-11-1901 AU 4132999 A 01-11-1901 AU 4132999 A 01-11-1901 AU 9953558 AI 21-10-1901 AU 995358 AI 21-10-1901 AI 995358 AI 21-10-1	DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 01 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 01 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 01 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20							
JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20	JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20	DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 WO 9953558 A1 21-10-19 DE 59903834 01 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	JP 3245161 B2 07-01-20 EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20				_			
EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20	EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20	EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20	EP 1152477 A 07-11-2001 JP 2002025587 A 25-01-20							
CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 TE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-11 CA 2327310 A1 21-10-10 WO 9953558 A1 21-10-10 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-2	CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	CA 2345566 A1 02-11-20 EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20							
EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 TE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-11 CA 2327310 A1 21-10-10 WO 9953558 A1 21-10-10 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-2	EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	EP 1152477 A2 07-11-20 US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	EP 1152477	Α	07-11-2001				25-01-200
US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-2	US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	US 2001051294 A1 13-12-20 DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20							
DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-2	DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 W0 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 W0 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	DE 19815796 A 14-10-1999 DE 19815796 A1 14-10-19 AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 W0 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20				£Ρ			
AT 230164 T 15-01-20 AU 4132999 A 01-11-10 CA 2327310 A1 21-10-10 WO 9953558 A1 21-10-10 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-2	AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20				US	2001051294	A1	13-12-20
AT 230164 T 15-01-20 AU 4132999 A 01-11-10 CA 2327310 A1 21-10-10 WO 9953558 A1 21-10-10 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-2	AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	AT 230164 T 15-01-20 AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	DE 19815796	Α	14-10-1999	DE	19815796	Al	14-10-19
AU 4132999 A 01-11-11 CA 2327310 A1 21-10-11 WO 9953558 A1 21-10-11 DE 59903834 D1 30-01-21 EP 1070362 A1 24-01-21 US 6528197 B1 04-03-2	AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	AU 4132999 A 01-11-19 CA 2327310 A1 21-10-19 WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20				AT			15-01-20
WO 9953558 A1 21-10-10 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20				AU	4132999	Α	01-11-19
WO 9953558 A1 21-10-10 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	WO 9953558 A1 21-10-19 DE 59903834 D1 30-01-20 EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20				CA			21-10-19
EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20					9953558	A1	21-10-19
EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20	EP 1070362 A1 24-01-20 US 6528197 B1 04-03-20				DE	59903834	01	30-01-20
								1070362	A1	24-01-20
US 5176966 A 05-01-1993 NONE	US 5176966 A 05-01-1993 NONE	US 5176966 A 05-01-1993 NONE	US 5176966 A 05-01-1993 NONE				US	6528197	B 1	04-03-20
					Α	05-01-1993	NONE			
				US 5176966						
				US 5176966						
				US 5176966						

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82